

## Missouri Department of Natural Resources

# Total Maximum Daily Load Information Sheet

## Cedar Creek and Horse Creek

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### Water Body Segment at a Glance:

**County:** Cedar  
**Nearby Cities:** Jerico Springs  
**Length of impaired segments:**  
    **Cedar Creek 1344:** 27 miles  
                            1357: 16.5 miles  
    **Horse Creek:** 24.5 miles  
**Pollutant:** Unknown  
**Source:** Unknown  
**Water Body IDs:** Cedar Creek – 1344, 1357  
                            Horse Creek – 1348



State Map Showing Location of Watershed

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**Scheduled for TMDL development:** 2016

### Description of the Problem

#### Designated Beneficial uses

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation (WBID 1344)
- Secondary Contact Recreation (WBID 1344)
- Irrigation (Horse Creek and WBID 1344)

#### Uses that are impaired

- Protection of Warm Water Aquatic Life
- General Criteria

#### Standards that apply

- Because Cedar and Horse creeks are impaired by unknown pollutants, specific criteria cannot be cited. However, all Missouri streams are protected by the general criteria found in the Water Quality Standards at 10 CSR 20-7.031 (3). The general criteria that could apply to these creeks state:

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.
- (G) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

### Background information and water quality data

Horse Creek is a tributary to Cedar Creek. They are located in northern Cedar County and both flow north east. The unknown impairment of both creeks is based on macroinvertebrate sampling during biological assessments of the aquatic community. Cedar Creek was monitored as part of the department's Wadeable Streams Quality Assurance Plans because it is a representative stream for the West Missouri Prairie-Ozarks transition area (part of the Ecological Drainage Unit classification system). It was sampled six times from 2001 to 2007. Horse Creek's aquatic invertebrate community was monitored in 1995, 2000, 2006 and 2007.

Stream Condition Index, or SCI, scores of 16 or more are considered to reflect macroinvertebrate communities that are not impaired. When there are seven or fewer samples, as in the case of Cedar Creek (See Table 1), the water is judged to have an impaired aquatic community if 75 percent of the samples score less than 16. In Cedar Creek, 83.3 percent of the samples scored less than 16. When there are more than seven samples, invertebrate communities are judged to be impaired if the percent of sampling sites receiving a score of 16 or more is significantly less than for reference streams in the same Ecological Drainage Unit, or EDU. Reference streams in this EDU score 16 or higher for 82.6 percent of all samples. For Horse Creek, 25 percent of all samples have an SCI score of 16 or higher (See Table 2). Thus, both creeks are judged to be impaired; however, the cause of this impairment is unknown.

**Table 1. Cedar Creek Stream Condition Index**

Org	Site	Location	Date	Score
MDNR	1357/6.0	Cedar Cr. @ Hwy B	Fall 2003	14
MDNR	1357/6.0	Cedar Cr. @ Hwy B	Spring 2004	14
MDNR	1357/6.0	Cedar Cr. @ Hwy B	Fall 2006	10
MDNR	1357/6.0	Cedar Cr. @ Hwy B	Spring 2007	10
MDNR	1344/30.0	Cedar Cr. @ Hwy Z	Spring 2001	12
MDNR	1344/30.0	Cedar Cr. @ Hwy Z	Fall 2001	16

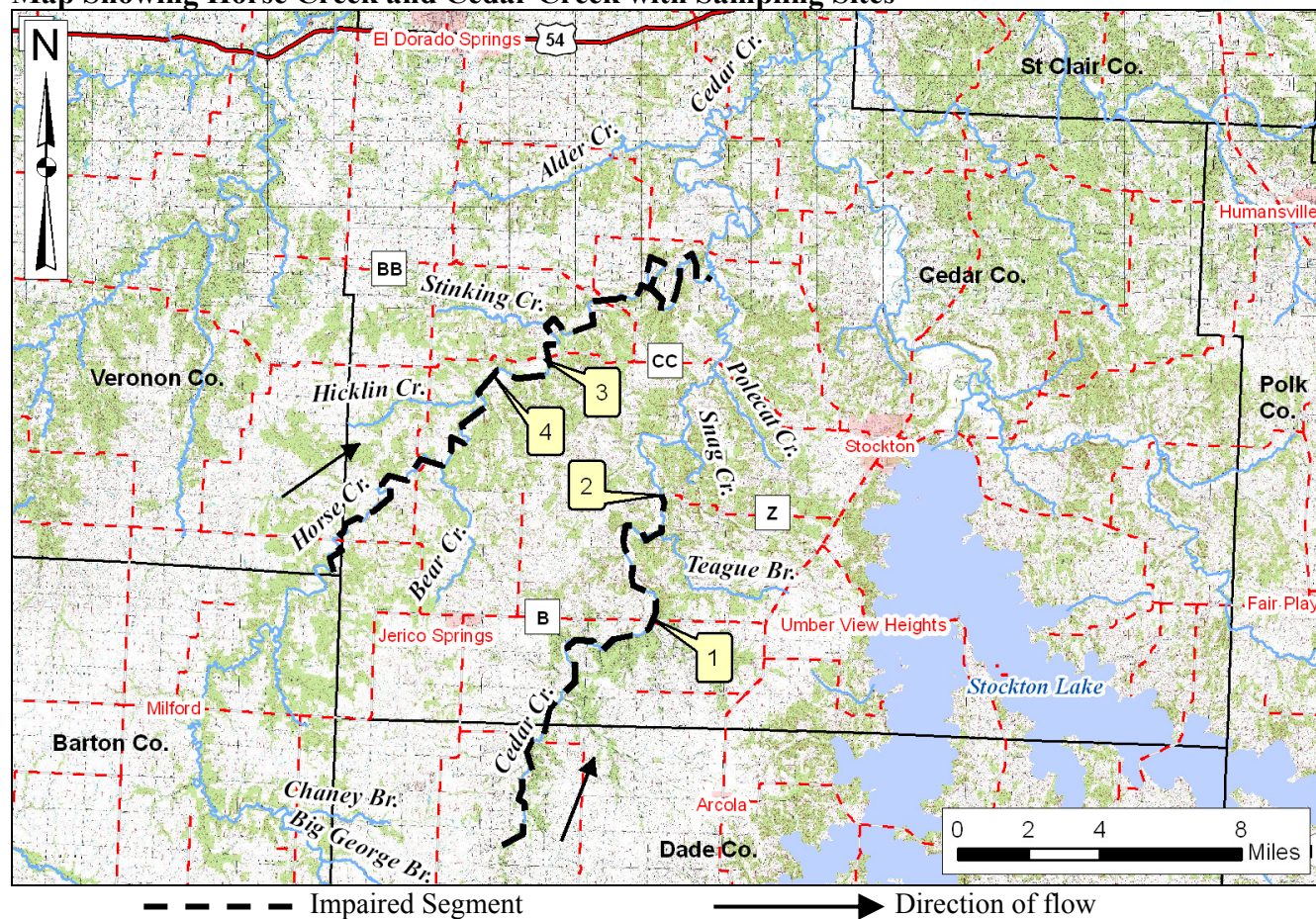
**Table 2. Horse Creek Stream Condition Index**

Org	Site	Location	Date	Score
MDNR	1348/12.0	Horse Cr. ab. Hwy CC	Spring 1995	14
MDNR	1348/12.0	Horse Cr. ab. Hwy CC	Fall 1995	16
MDNR	1348/12.0	Horse Cr. ab. Hwy CC	Fall 2006	10
MDNR	1348/12.0	Horse Cr. ab. Hwy CC	Spring 2007	10
MDNR	1348/10.0	Horse Cr. @ Hwy CC	Spring 1995	16
MDNR	1348/10.0	Horse Cr. @ Hwy CC	Fall 1995	14
MDNR	1348/10.0	Horse Cr. @ Hwy CC	Spring 2000	14
MDNR	1348/10.0	Horse Cr. @ Hwy CC	Fall 2000	12

All waters of the state, as per Missouri water quality standards, must provide a suitable home for aquatic life. A combination of natural geology and land use in the prairie region, where these creeks are located, is believed to have reduced both the amount and the quality of habitat for aquatic life. The major water quality problems in this area are excessive nutrients and increased rates of sediment deposition due to stream bank erosion and sheet erosion from agricultural lands, loss of stream length and stream channel heterogeneity due to channelization and changes in basin hydrology that have increased flooding and prolonged low flow conditions. TMDLs are not written to address habitat, but

are written to correct water quality conditions. Therefore, when the pollutant is unknown, TMDLs, for this reason, will usually target nutrients and sediment

**Map Showing Horse Creek and Cedar Creek with Sampling Sites**



**Sample Sites**

- |                                  |                                      |
|----------------------------------|--------------------------------------|
| 1 – Cedar Cr. at State Highway B | 3 – Horse Cr. at State Highway CC    |
| 2 – Cedar Cr. at State Highway Z | 4 – Horse Cr. above State Highway CC |

**For more information call or write:**

Missouri Department of Natural Resources

Water Protection Program

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